

APPENDIX A

SAUNDERS TEXT AND REVIEW SERIES

CELLULAR AND MOLECULAR IMMUNOLOGY

THIRD EDITION

ABUL K. ABBAS, M.B., B.S.

Professor of Pathology
Harvard Medical School
Brigham and Women's Hospital
Boston, Massachusetts

ANDREW H. LIGHTMAN, M.D., Ph.D.

Associate Professor of Pathology
Harvard Medical School
Brigham and Women's Hospital
Boston, Massachusetts

JORDAN S. POBER, M.D., Ph.D.

Director, Molecular Cardiobiology
Boyer Center for Molecular Medicine
Professor of Pathology and Immunobiology
Yale University School of Medicine
New Haven, Connecticut

W.B. SAUNDERS COMPANY

A Division of Harcourt Brace & Company

Philadelphia London Toronto Montreal Sydney Tokyo

W.B. SAUNDERS COMPANY
A Division of Harcourt Brace & Company

The Curtis Center
Independence Square West
Philadelphia, Pennsylvania 19106

Library of Congress Cataloging-in-Publication

Abbas, Abul K.
Cellular and molecular immunology / Abul K. Abbas, Andrew H. Lichtman,
Jordan S. Pober.—3rd ed.

p. cm.

Includes bibliographical references and index.

ISBN 0-7216-4024-9

1. Cellular immunity. 2. Molecular immunology. I. Lichtman, Andrew H.
II. Pober, Jordan S. III. Title.
[DNLM: 1. Immunology, Cellular. 2. Lymphocytes—immunology. QW
568 A122c 1997]

QR185.5.A23 1997 616.07'9—dc21

DNLM/DLC

96-49579

CELLULAR AND MOLECULAR IMMUNOLOGY

ISBN 0-7216-4024-9

Copyright © 1997, 1994, 1991 by W.B. Saunders Company

All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopy, recording, or any information storage and retrieval system, without permission in writing from the publisher.

Printed in the United States of America.

Last digit is the print number: 9 8 7 6 5 4 3 2 1

APPENDIX: PRINCIPAL FEATURES OF KNOWN CD MOLECULES (Continued)

| CD Designation | Common Synonym(s) | Molecular Structure | Main Cellular Expression | Known or Proposed Function(s) |
|----------------|--|---|---|--|
| CDw17 | — | Carbohydrate epitope (lactosylceramide) | Granulocytes, macrophages, platelets | ? |
| CD18 | β chain of LFA-1 family (B2 integrins) | 85 kD, non-covalently linked to CD11a, CD11b, or CD11c | Leukocytes | See CD11a, CD11b, CD11c |
| CD19 | B4 | 90 kD | Most B cells | Role in B cell activation |
| CD20 | B1 | Heterodimer, 39 and 37 kD chains | Most or all B cells | Role in B cell activation or regulation; calcium ion channel |
| CD21 | CR2, C3d receptor, B2 | 145 kD | Mature B cells | Role in B cell activation; receptor for C3d, Epstein-Barr virus |
| CD22 | — | 135 kD | B cells | Role in B cell activation |
| CD23 | Fc ϵ RIIb | 45–50 kD | Activated B cells, macrophages | Low-affinity Fc ϵ receptor, induced by IL-4; function unknown |
| CD24 | Heat-stable antigen | Heterodimer of 38 and 41 kD chains; 1:1 linked | B cells, granulocytes | Role in costimulation of T cells |
| CD25 | IL-2 receptor α chain; TAC; p55 | 55 kD | Activated T and B cells; activated macrophages | Complexes with IL-2R β and high-affinity IL-2 receptor; T cell growth |
| CD26 | — | 70 kD | Activated T and B cells; macrophages | Serine peptidase |
| CD27 | — | Homodimer of 55 kD chains | Most T cells; ? some plasma cells | ? Costimulation of T cells; member of TNF-R, Fas, CD40 family |
| CD28 | Tp34 | Homodimer of 44 kD chains | T cells (most CD4 ⁺ , some CD8 ⁺ cells) | T cell receptor for costimulatory molecule(s) B7-1, B7-2 |
| CD29 | β chain of VLA antigens (B1 integrins) | 130 kD, non-covalently associated with VLA α chains (CD49) | Broad | Adhesion to extracellular matrix proteins, cell-cell adhesion (see CD49) |
| CD30 | Ki-1 | 105 kD | Activated T and B cells; Reed-Sternberg cells in Hodgkin's disease | ? Role in activation; induced cell death; member of TNF-R family |
| CD31 | PECAM-1, platelet gpIIb | 140 kD | Platelets; monocytes, granulocytes, B cells, endothelial cells, T cells | Role in leukocyte-endothelial adhesion |
| CD32 | Fc γ RII | ~40 kD | Macrophages, granulocytes, B cells, eosinophils | Fc receptor for aggregated IgG; role in phagocytosis, ADCC, feedback inhibition of B cells |
| CD33 | — | 67 kD | Monocytes, myeloid progenitor cells | ? |
| CD34 | — | 90 kD | Precursors of hematopoietic cells, vascular endothelium | Ligand for L-selectin |

Table continued on following page

APPENDIX: PRINCIPAL FEATURES OF KNOWN CD MOLECULES (Continued)

| CD Designation | Common Synonym(s) | Molecular Structure | Main Cellular Expression | Known or Proposed Function(s) |
|----------------|---|---|---|---|
| CD35 | CR1; C3b receptor | Polymorphic; four forms are 190–280 kD | Granulocytes, monocytes, erythrocytes, B cells | Binding and phagocytosis of C3b-coated particles and immune complexes |
| CD36 | Platelet gpIIb | 90 kD | Monocytes, platelets | ? Platelet adhesion |
| CD37 | — | Composed of two or three 40–52 kD chains | B cells, some T cells | ? |
| CD38 | TI10 | 45 kD | Plasma cells, thymocytes, activated T cells | ? |
| CD39 | — | 78 kD | Activated B cells, NK cells, some T cells | ? |
| CD40 | — | Heterodimer of 44 and 48 kD chains | B cells, macrophages, dendritic cells, endothelial cells, epithelial cells | Role in B cell and macrophage activation induced by T cell contact; receptor for T cell CD40 ligand; member of Fas/TNF-R family |
| CD41 | gpIIb component of gpIIb/IIIa complex (gpIIa is CD61) | Complex of gpIIb heterodimer (120 and 23 kD) and gpIIa (CD 61) (integrin) | Platelets | Platelet aggregation and activation; receptor for fibrinogen, fibronectin (binds to R-G-D sequence) |
| CD42a | Platelet gPIX | 23 kD; forms complex with CD42b | Platelets, megakaryocytes | Platelet adhesion, binding to von Willebrand's factor |
| CD42b | Platelet gpIb | Dimer of 135 and 25 kD chains, forms complex with CD42a | See CD42a | See CD42a |
| CD43 | Sialophorin | 115 kD, highly sialylated | Leukocytes (except circulating B cells) | ? Role in T cell activation |
| CD44 | Fgp-1; Hermes | 80–100 kD, highly glycosylated | Leukocytes, erythrocytes | May function as homing receptor; receptor for matrix components (e.g., hyaluronate) |
| CD45 | T200; leukocyte common antigen | Multiple isoforms, 180–220 kD | Leukocytes | Role in signal transduction (tyrosine phosphatase) |
| CD45R | Forms of CD45 with restricted cellular expression | CD45RO: 180 kD CD45RA: 220 kD CD45RB: 190, 205, and 220 kD isoforms | CD45RO: memory T cells CD45RA: naive T cells CD45RB: B cells, subset of T cells | See CD45 |
| CD46 | Membrane cofactor protein (MCP) | 45–70 kD | Leukocytes; epithelial cells, fibroblasts | Regulation of complement activation; binds C3b and C4b |
| CD47 | — | 47–52 kD | Broad | Mediates neutrophil migration across epithelium |
| CD48 | BLAST-1 | 41 kD; PHlinked | Leukocytes | ? |
| CD49a | VLA α_1 chain | 210 kD; associates with CD29 to form VLA-1 (β_1 integrin) | Activated T cells, monocytes; other connective tissue cells | Adhesion to collagen, laminin |
| CD49b | VLA α_2 chain; platelet gpla | 170 kD; associates with CD29 to form VLA-2 (β_1 integrin) | Platelets, activated T cells, monocytes, some B cells | Adhesion to extracellular matrix; receptor for collagen |